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Case Study

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SUCCESSFUL MANAGEMENT OF JUGULAR FORAMEN SYNDROME THROUGH AYURVEDA – A CASE STUDY

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ABSTRACT

"BRAIN" is the organ of destiny, a monstrous beautiful mess, treating neurological disorders have been more challenging to the medical field ever since the discovery. Jugular foramen syndrome is one such disorder characterized by paralysis of the 9th, 10th, 11th cranial nerves (glossopharyngeal, vagus and accessory) traversing the jugular foramen. Jugular foramen is one of the two large foramina in the base of the skull, located behind the carotid canal. It is formed by the temporal bone and the occipital bone. It allows many structures to pass, including the inferior petrosal sinus, three cranial nerves, the sigmoid sinus, and meningeal arteries. Female aged 34 years, diagnosed with jugular foramen syndrome associated with left jugular foramen lesion and 9th, 10th, 11th, and 12th cranial nerve palsy, an attempt was made to manage the symptoms through the holistic approach of Ayurveda when the case was untreatable by the other health systems due to the multiple complexities of the case. *" Na hi kaschidanyo vayoho param janmani heturasti "*, *vayu* being the main cause, *vatahara chikitsa* was followed and significant positive results were obtained both subjectively and objectively within 2 months. Hereby this case is one of the successful examples to prove the efficiency of *vatavyadhi chikitsa* in neurological conditions by upholding the importance of *Ayurveda.*

KEYWORDS: *Ayurveda, Cranial nerve palsy, Jugular Foramen, Neurology, collet sicard syndrome, Vata vyadhi.*

INTRODUCTION

The base of the skull has multiple important foramina that allow the passing of vital tissues, primarily blood vessels and nerves. The two jugular foramina exist at the base of the skull lateral to the foramen magnum. Importantly the internal jugular veins, which drain blood from the brain and intracranial tissues, make their way out of the cranium and terminate at the subclavian veins and ultimately join the brachiocephalic vein.[1]

The jugular foramen is a cavity formed by the petrous part of the temporal bone anteriorly and the occipital bone posteriorly. Its major function is to act as a conduit for essential structures to pass through.[1] The structures that traverse the jugular foramen are the sigmoid sinus, inferior petrosal sinus, jugular bulb, Cranial Nerve 9th,10th,11th, Jacobson's nerve, Arnold's nerve, meningeal branches of the ascending pharyngeal and occipital arteries, and the cochlear aqueduct. Collet-sicard syndrome also known as condylar jugular syndrome, is a constellation of cranial nerve palsies due to neoplastic or non-neoplastic lesions at the jugular foramen.[2]

Vata vyadhi is a broad spectrum of diseases explained by our *acharyas*, where concept of *anya aavarana* and *anonyavarana*[2] of *vata* and its subtypes plays a major role in diagnosing and treating *anukta vatavyadhi.*

Jugular foramen syndrome is one such complex condition, management of which is challenging to the health care systems. Here is a case study where successful management of jugular foramen syndrome through *vatavyadhi chikitsa*.

MATERIALS AND METHODS

Case History

Female aged 34 years, NRI Resident of Australia, not a k/c/o any systemic or metabolic diseases was apparently normal till the end of November 2022, she suddenly developed dysphonia, tongue weakness, and difficulty in shrugging her shoulders which was in a fast rate of

progression, she was admitted in a allopathy hospital and found to have left vocal cord palsy through Nasoendoscopy, the symptoms improved by prednisone but recurred on cessation, so MRI was done and jugular foramen syndrome along with left jugular lesion and palsy of 9th, 10th, 11th, 12th cranial nerve palsy was diagnosed. The patient was probably diagnosed as suffering from Jugular foramen syndrome associated with Collet sicard syndrome. The patient was not fit for FNAC and other surgical procedures due to its structural complexities, and patient couldn't find any improvements even after steroidal interventions. Hence patient visited our hospital for the betterment of the condition.

Chief complaints of the patient

- Dysphonia
- Dysphagia
- Difficulty in shoulder shrugging
- Deviation of mouth
- Anorexia

Treatment given

Table 1: Oral medications were given to the patient in her first visit.

Medicine name	Morning	afternoon	night	After/before food
Ekangaveera rasa	1	1	1	After food
Nityananda rasa	1	1	1	After food
Bioflake C3	1	1	1	After food
Neuron	1	1	1	After food
Cruel plus	1	1	1	After food
Vatahara kwatha	15ml	0	15ml	After food
Ksheerabala taila for *kavala*	1	0	1	Before food

Above medications were prescribed for 20 days,

In the 1st follow up, same medications were continued and *Maharshi Amrita Kalasha* was added, tablet twice daily after food, and *lehya* 1tsp-0-1tsp after food was prescribed for 15 days.
In the 2nd follow up, same medications were continued for 1 month
In the 3rd follow up, same medications were continued for 3 months.

Understanding jugular foramen syndrome through Ayurveda

Vata vyadhi is a unique concept of *Ayurveda* which encroaches broad spectrum of neurological conditions. Numerous *vata vyadhis* has been explained in ayurvedic classics which can be understood and corelated to many neurological conditions. *Anukta vatavyadhi* can be diagnosed and treated based on the *lakshana*, *desha*, *kaala*, *dosha*, *roga* and *rogi avastha*. Jugular foramen syndrome can be understood and probably corelated under these concepts explained in the classics.

1. *Kaphavruta udaana*[4], *urasthanam udaana*[5]: we know that *sthana* of *udaana vata* is *urapradesha*, and it is responsible of *vak pravrutti*. It is explained that in *kaphavruta udana vata aavarana*, the main symptoms are *vaak swara graha* and *aruchi*
2. *Avyakta lakshanam*[6]*: avyakta lakshanam* is the *purvaroopa* of *vata vyadhi*, where there is sudden onset of the *vyadhi* without any primordial symptoms.
3. *Indriyagata vata*[7]: it is explained by *acharya charaka* that there is *indriya vadha. Arunadatta* has explained *rasanendriya vinaasha* and *sva vishaya grahana ashakta*
4. *Praano atra murdhaga*[8]: the *sthana* of *prana vata* is located at *shiro pradesha*, and the main functions are *anna praveshakrut*, movement of bolus from mouth to oesophagus is due to *prana vata karma*
5. *Anukta vata roga sangraha*[9.10]: according to *acharya charaka* and *Madhavakara anukta vata vyadhi* is treated based on the *avarana* concept and *sthana*, *naama roopa* and *lakshana* of the *roga* and *rogi avastha*.
6. *Ardita* according to *sushruta acharya*[11]: one of the major causes of *ardita* according to *sushrutacharya* is *asruk kshaya* and the main symptoms explained are *vakribhavati vaktra ardham*, *nasa oushta lalta chibuka sandhi* get affected and *vaksangha*.
7. Based on the above explanations found in different *Ayurveda* classics, *vatahara shamana chikitsa* was adopted in this case.

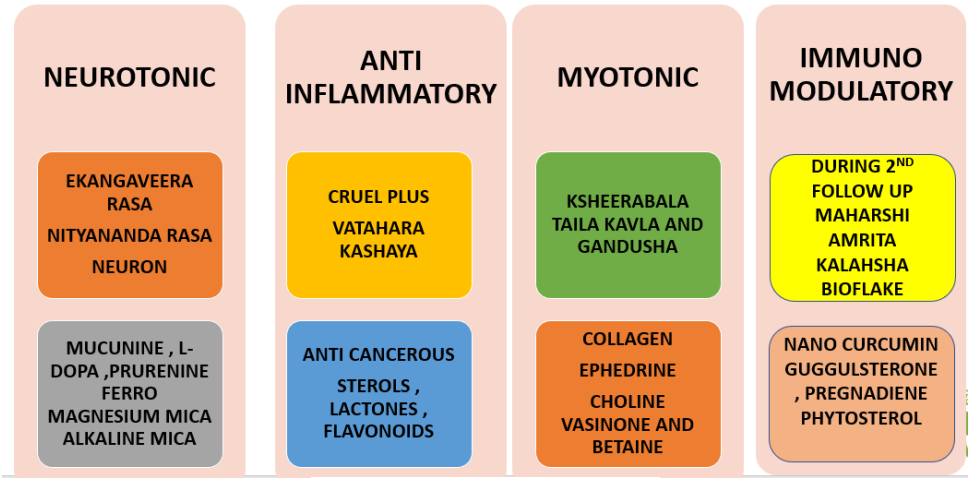


Fig.1 Probable mode of action.

Table 2: Active principles and their actions.

ACTIVE PRINCIPLE	ACTIONS
Mucunine	Neuro protective
L-dopa	Dopamine supplement
Prurenine	Neurotonic, natural source of eldopa
Ferro magnesium mica	Cellular level permeability, increases bio availability of the drug
Alkaline mica	Cellular regeneration
Sterols	Plant based steroids, Membrane reinforcement
Lactones	Anti-tumor, anti-inflammatory
Flavonoids	Anti-oxidant, anti-inflammatory, anti-viral, anti-cancerous, neuro protective and cardioprotective
Collagen	Fibroblast receptors, provides strength to skin, ligaments and bones
Ephedrine	Peripheral circulation
Choline	Motor control, Myo protein
Vasinone	Anti-oxidant, relieves cyto toxicity
Betaine	Cellular regeneration
Nano curcumin	Anti-cancerous, neurotonic, blood purifier and detoxifier
Guggulusterone	Anti-tumor, anti-cancerous, anti-epileptic actions,
Pregnadiene	Plant based steroid
Phytosterol	Acts on bad cholesterol and removes blockages (*srotoshodhaka*)

Table 3: Assessment before and after treatment.

BEFORE TREATMENT	AFTER 2 MONTHS	AFTER 8 MONTHS
Dysphonia	Able to talk fluently	Able to talk fluently
Dysphagia	Easy swallowing	Easy swallowing
Deviation of the mouth	No deviation	No deviation
Difficulty in shrugging shoulders	Normal shrugging	Normal shrugging

Table 4: Lesion size before and after treatment.

Foramen lesion before treatment	3.1*2.7cm Jan 2023
After 1st follow up	2*1.6 cm Feb 2023
After 2nd follow up	1.6*1.1cm Mar 2023
After 3rd follow up	No lesion seen in MRI Sept 2023

MRI REPORTS

NAME		STUDY	18-01-2023 17:13:30
AGE/GENDER	40Y 9M 26D / F	UHID	240152964
ACC NO	2400028239	MOD	MR
REFERER	Dr. SOWMYA M	REPORT	18-01-2023 18:58:33

The orbits and their contents are normal.

Paranasal sinuses appear normal.

IMPRESSION:

- **T2 and FLAIR hyperintense lesion noted involving left sided jugular Foramina (pars nervosa and vasculosa), hypoglossal canal, left lateral parapharyngeal space, deep part of parotid gland, medial part of TM joint, surrounding styloid process and along the carotid artery up to C1-C2 junction. Post-contrast shows homogeneous and intense contrast enhancement. Deep part of left parotid gland appears bulky. Mild STIR hyperintense bony changes noted involving left side of the clivus, occipital condyle and jugular tubercle suggestive of marrow oedema without obvious erosions. Minimal collection noted in left mastoid air cells.- these findings could possibly suggestive of granulomatous disease ?? neoplastic.**
- **MR venogram shows persistent occipital sinus, hypoplastic bilateral transverse and sigmoid sinuses with non-visualisation of left sigmoid sinus distally.**

**** present scan as compared with the previous MRI done in December 2022 and January 2023. As compared to the December 2022 scan the disease process has progressed however as compared to the January 2023 scan the disease is stable and marginally reduced in signal intensity and size especially in the parapharyngeal space region. Suggested histopathological correlation.**

Fig.2: MRI REPORT AS ON JAN 2023.

NAME		STUDY	22-02-2023 14:38:41
AGE/GENDER	34Y 10M / F	UHID	240152964
ACC NO	2400033682	MOD	MR
REFERER	Dr. Ravindra B Kamble	REPORT	22-02-2023 16:03:49

Paranasal sinuses appear normal.

IMPRESSION:

- **T2 and FLAIR hyperintense lesion noted involving left sided jugular Foramina (pars nervosa and vasculosa), hypoglossal canal, left lateral parapharyngeal space, deep part of parotid gland, surrounding styloid process and along the carotid artery up to C1. Post-contrast shows homogeneous and intense contrast enhancement. Mild STIR hyperintense bony changes noted involving left side of the clivus, occipital condyle and jugular tubercle suggestive of marrow oedema without obvious erosions.- these findings could possibly suggestive of granulomatous disease.**
- **MR venogram shows persistent occipital sinus, hypoplastic bilateral transverse and sigmoid sinuses with non-visualisation of left sigmoid sinus distally.**

**** Present scan as compared with the previous MRI done in 18/01/2023, which showed significant reduction in signal intensity and size especially in the parapharyngeal space region and deep part of parotid gland. (previously it measured 3.1 X 2.7 cm and presently measures 2 X 1.6 cm).**

Fig. 3: MRI AS ON FEB 2023.

NAME		STUDY	21-03-2023 12:26:28
AGE/GENDER	34Y 11M 27D / F	UHID	240152964
ACC NO	2400038384	MOD	MR
REFERER	Dr. SOWMYA M	REPORT	21-03-2023 16:09:25

Paranasal sinuses appear normal.

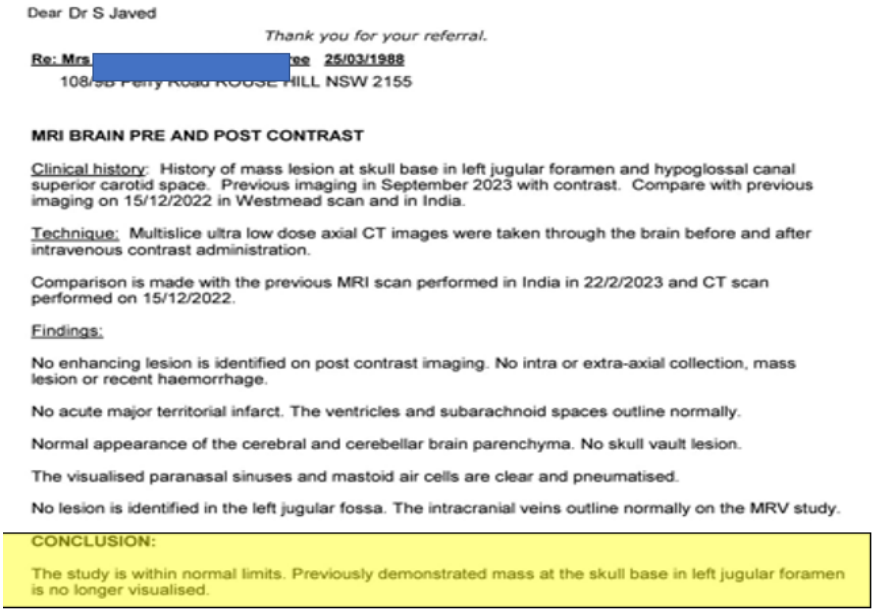
IMPRESSION:

*** T2 and FLAIR hyperintense lesion noted involving left sided jugular Foramina (pars nervosa), hypoglossal canal, left lateral parapharyngeal space, deep part of parotid gland, surrounding styloid process and along the carotid artery up to C1. Post-contrast shows homogeneous and intense contrast enhancement. Mild STIR hyperintense bony changes noted involving left side of the clivus, and jugular tubercle suggestive of marrow oedema without obvious erosions. - these findings could possibly suggestive of granulomatous disease.**

*** MR venogram shows persistent occipital sinus, hypoplastic bilateral transverse and sigmoid sinuses.**

**** Present scan as compared with the previous MRI done in 22-02-2023, which showed significant reduction in signal intensity and size especially in the parapharyngeal space region and deep part of parotid gland (previously it measured 2 X 1.6 cm and presently measures 1.6 X 1.1 cm) with reduction in marrow edema especially in occipital condyle on left side.**

Fig. 4: MRI AS ON MAR 2023.



Dear Dr S Javed

Thank you for your referral.

Re: Mrs [redacted] 25/03/1988

108/98 Perry Road ROUSE HILL NSW 2155

MRI BRAIN PRE AND POST CONTRAST

Clinical history: History of mass lesion at skull base in left jugular foramen and hypoglossal canal superior carotid space. Previous imaging in September 2023 with contrast. Compare with previous imaging on 15/12/2022 in Westmead scan and in India.

Technique: Multislice ultra low dose axial CT images were taken through the brain before and after intravenous contrast administration.

Comparison is made with the previous MRI scan performed in India in 22/2/2023 and CT scan performed on 15/12/2022.

Findings:

No enhancing lesion is identified on post contrast imaging. No intra or extra-axial collection, mass lesion or recent haemorrhage.

No acute major territorial infarct. The ventricles and subarachnoid spaces outline normally.

Normal appearance of the cerebral and cerebellar brain parenchyma. No skull vault lesion.

The visualised paranasal sinuses and mastoid air cells are clear and pneumatised.

No lesion is identified in the left jugular fossa. The intracranial veins outline normally on the MRV study.

CONCLUSION:

The study is within normal limits. Previously demonstrated mass at the skull base in left jugular foramen is no longer visualised.

Fig. 5: MRI AS ON SEPT 2023.

DISCUSSION

Ayurveda is the Indian system of medicine, where it has a holistic approach to treat body as whole. One of the Fundamental principle of *Ayurveda* is *Tridosha* theory, where *vata* is the major *dosha* which regulates all the systemic activities of the body. Jugular Foramen Syndrome is one such *vata vyadhi*, which occurs due to *dhatu kshaya* or *avarana janya*. This case was diagnosed as *avarana janya vata vyadhi* and based on the *roga* and *rogi avastha* the above said *vatahara*, *srotoshodhaka* followed by *Naimittika Rasayana chikitsa* was adopted in successful management of this particular case.

CONCLUSION

The Jugular Foramen Syndrome is a very complex condition and management in any medical science is an absolute challenge to medical field. The structural complexity inhibited further diagnosis, FNAC and surgery too an attempt was made to manage the condition where the yielded results were complimentary to the ayurvedic science

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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